

January 27, 2016

MEMORANDUM

To: Jennifer R. Baxter, Industrial Economics, Incorporated (IEc)

From: Adam Zerrenner, Field Office Supervisor, Austin Ecological Services Field Office

Subject: Incremental Effects Memorandum for the Economic Analysis for the Proposed Rule to Designate Critical Habitat for Guadalupe Fescue (*Festuca ligulata*).

The purpose of this memorandum is to provide information to serve as a basis for conducting an economic analysis for the proposed designation of critical habitat for Guadalupe fescue. Section 4(b)(2) of the Endangered Species Act (Act) requires the Secretary of Interior (Secretary), and therefore by delegation the U.S. Fish and Wildlife Service (Service), to consider the economic, national security, and other impacts of designating a particular area as critical habitat. The Secretary may exclude an area from critical habitat if the Secretary determines that the benefits of exclusion outweigh the benefits of including the area as critical habitat, unless the exclusion will result in the extinction of the species. In part to comply with section 4(b)(2) of the Act and consider the economic impacts of a proposed critical habitat designation, the Service prepares an economic analysis that describes and monetizes, where possible, the probable economic impacts of the proposed regulation. The data in the economic analysis may be used in the discretionary

balancing evaluation under section 4(b)(2) of the Act to consider any particular area for exclusion from the final designation.

Determining the economic impacts of a critical habitat designation involves evaluating the “without critical habitat” baseline versus the “with critical habitat” scenario, to identify those effects expected to occur solely due to the designation of critical habitat and not from the protections that are in place due to the species being listed under the Act. Effects solely due to the critical habitat designation equal the difference, or increment, between these two scenarios, and include both (1) the effects of changes in the action to avoid destruction or adverse modification of critical habitat and (2) the costs of increased administrative efforts that result from the designation. These changes can be thought of as “changes in behavior” or the “incremental effect” that would most likely result from the designation if finalized. Specific measured differences between the baseline (without critical habitat) and the designated critical habitat (with critical habitat) may include, but are not limited to, the economic effects stemming from changes in land or resource use or extraction, changes in environmental quality, or time and effort expended on administrative and other activities by Federal landowners, Federal action agencies, and in some instances, State and local governments or private third parties. These are the incremental effects that serve as the basis for the economic analysis.

There are a number of ways that designation of critical habitat could influence activities, but one of the important functions of this memorandum is to explain any differences between actions required to avoid jeopardy to the species versus actions that may be required to avoid destruction or adverse modification of critical habitat. The Service is analyzing whether destruction or

adverse modification would occur based on whether the Federal agency's action is likely "to result in the destruction or adverse modification of habitat which is determined by the Secretary... to be critical." To perform this analysis, the Service considers how the proposed action is likely to affect the function of the critical habitat unit in serving its intended conservation role relative to the entire designation. The information provided below is intended to identify the possible differences for this species under the two different section 7 standards (i.e., jeopardy to the species and adverse modification of critical habitat). Ultimately, however, a determination of whether an activity may result in the destruction or adverse modification of critical habitat is based on the effects of the action to the designated critical habitat in its entirety. The information provided below is intended to identify the possible differences for the Guadalupe fescue under the different section 7 standards for jeopardy to the species and destruction or adverse modification of critical habitat.

The Service recognizes that the "geographical area occupied by the species" at the time of listing as stated under section 3(5)(A)(i) of the Act as the geographical area which may generally be delineated around the species' occurrences, as determined by the Secretary (i.e., range). Such areas may include those areas used throughout all or part of the species' life cycle, even if not used on a regular basis (e.g., migratory corridors, seasonal habitats, and habitats used periodically, but not solely by vagrant individuals). The species may or may not be present within all areas of the geographical area occupied by the species. Thus, the "geographical area occupied by the species" can, depending on the species at issue and the relevant data available, be defined on a relatively coarse scale.

Section 7 consultation is required whenever there is a discretionary Federal action that may affect listed species or designated critical habitat. Section 7(a)(3) also states that a Federal agency shall consult with the Secretary on any prospective agency action at the request of, and in cooperation with, the prospective permit or license applicant if the applicant has reason to believe that an endangered species or a threatened species may be present in the area affected by his project and that implementation of such action will likely affect such species. The initiation of section 7 consultation under the jeopardy standard takes place if the species may be present and the action is likely to affect the species.

Because of the relatively coarse scale of analysis allowed by the definition of "critical habitat," the species may or may not be present within all portions of the "geographical area occupied by the species" or may be present only periodically. Therefore, at the time of any consultation under section 7 of the Act, the species of interest may not be present within the action area for the purposes of the section 7 consultation, even if that action area is within the "geographical area occupied by the species." This possibility however, does not change the "geographical area occupied by the species" as stated under section 3(5)(A)(i) for the species. It must however, be reflected in our analysis of the economic impacts of a critical habitat designation. How we implement each critical habitat designation under section 7 is important because even when an area is determined to be within the general geographical area occupied by the species at the time of listing, the specific area where a consultation may occur is based on the presence of the species with the action area and the effects to that species. If a species is not present and the action is not likely to adversely affect the species within a particular area designated as critical habitat at the time of consultation, the economic effects of the consultation would likely be

considered an incremental effect of the critical habitat because in almost all cases, the consultation would not have occurred absent the critical habitat designation¹. These incremental economic effects would derive both from changes in management, such as costs resulting from restrictions on development and other activities due solely to critical habitat, and changes in the scope of administrative review, i.e., the added costs of considering effects to critical habitat during consultation. (Additional administrative costs would also occur in *occupied* areas due to the need to analyze destruction or adverse modification of critical habitat along with jeopardy to the species.) In this memorandum, when we describe occupancy for purposes of estimating the probable incremental impacts and therefore, potential economic costs of critical habitat designation, we are referring to the occupancy status within the action area of a particular Federal action at the time of a consultation under section 7 of the Act. In this context the “geographical area occupied by the species” under section 3(5)(A)(i) and the area where a species may be present or may be affected by a particular Federal action under a section 7 consultation may differ. The difference lies in the implementation of the critical habitat designation for purposes of the section 7 consultation, although within the geographical range occupied by the species under 3(5)(A)(i), the species may or may not be present at the time of consultation. The purpose of this memorandum is to describe how the Service will implement the critical habitat designation; however, it is only on a case by case basis that we are able to evaluate whether or not a Federal action may affect the listed species or its critical habitat while considering the species’ presence within the action area.

¹ (If the area is not currently occupied and there is no critical habitat designated, it is unlikely that a Federal Agency would consult under section 7 in the first instance unless it is clear that activities in the unoccupied areas “may affect” nearby occupied areas.)

I. BACKGROUND

Guadalupe Fescue (*Festuca ligulata*)

Guadalupe fescue (*Festuca ligulata*) is a perennial grass species found only in a few high mountains of the Chihuahuan Desert, in northern Mexico and the southwestern United States. These “sky island” habitats are conifer-oak woodlands on talus slopes above 1,800 meters (m) (5,905 feet (ft)) elevation.

The species has been reported in only six sites. Table 1 below lists these sites and Figure 1 below is a map of their locations. It was first collected in 1931 in the Guadalupe Mountains, Culberson County, Texas, and in the Chisos Mountains, Brewster County, Texas; these sites are now within Guadalupe Mountains National Park and Big Bend National Park, respectively. Guadalupe fescue was documented in 1941 near Fraile, in southern Coahuila, in 1977 in the Sierra la Madera in central Coahuila, and two sites in the Maderas del Carmen mountains of northern Coahuila in 1973 and 2003.

Only two extant populations are currently known. The Boot Canyon population is the only known extant population in the U.S. The population at Guadalupe Mountains National Park has not been seen in more than 60 years and is presumed extirpated. The other known extant population is in Maderas del Carmen, a protected natural area in northern Coahuila, Mexico. The status of three other populations, all in Coahuila, is unknown.

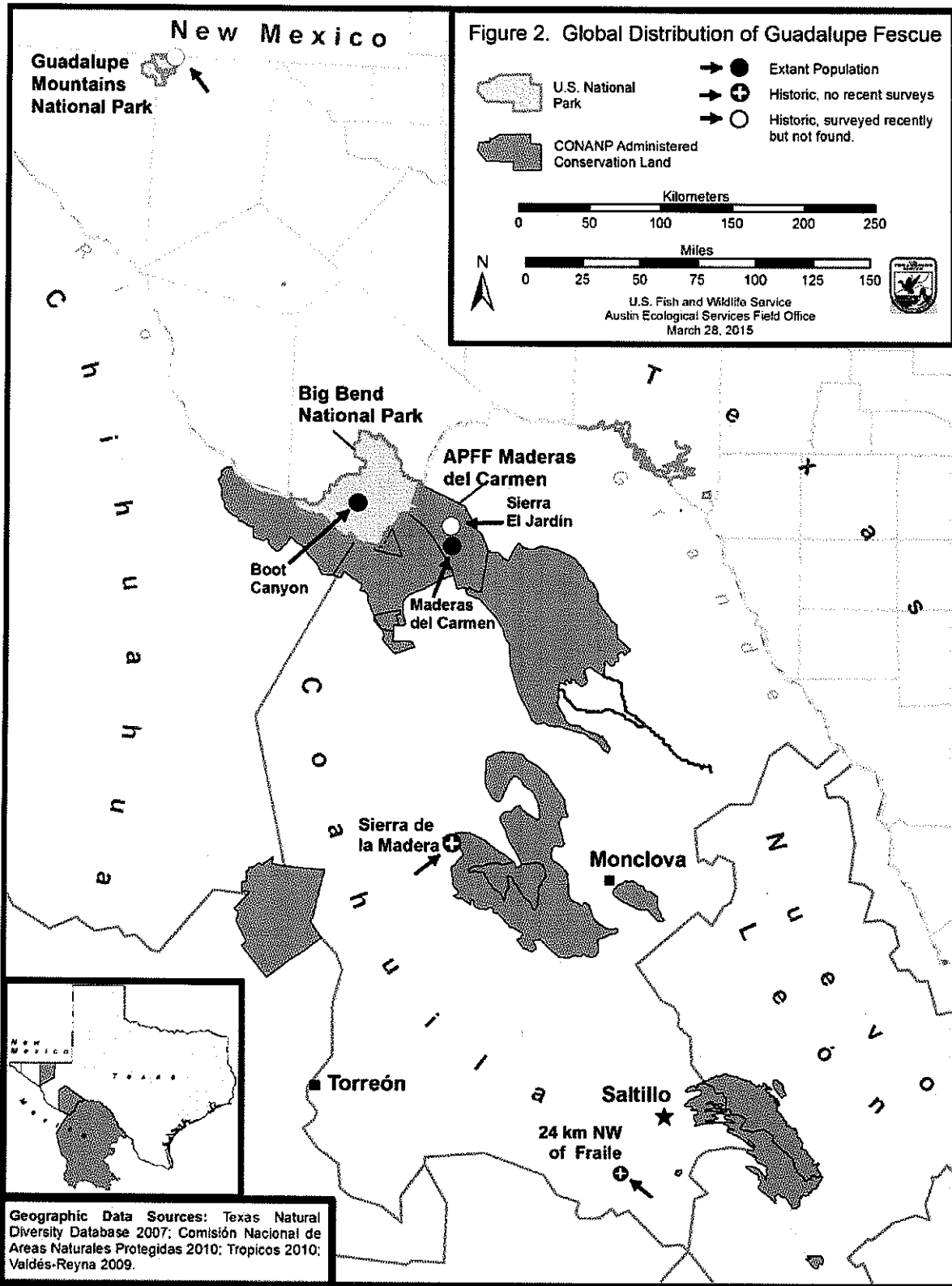
Factors that affect the continued survival of Guadalupe fescue include the small sizes and isolation of its known populations, changes in the wildfire cycle and vegetation structure, livestock grazing, trampling from humans and pack animals, trail runoff, competition from invasive species, climate changes, fungal infection of seeds, and the genetic consequences of small population sizes.

Table 1. Current and historic locations of Guadalupe fescue.

Site Name	Ownership	Location	County, State, Country	First Record	Last Observed	Current Status
Guadalupe Mountains	Guadalupe Mountains National Park	McKittrick Canyon	Culberson County, Texas	1931	1952	extirpated
Boot Canyon	Big Bend National Park	Boot Canyon, Chisos Mountains	Brewster County, Texas	1931	2015	Extant (monitored portion ranges from 47 to 127 individuals)
Franklin Mountains	Not applicable	Franklin Mountains in extreme west Texas	extreme west Texas	1973	N/A	misidentification
Maderas del Carmen	CEMEX - APFF Maderas del Carmen	Maderas del Carmen	Coahuila, Mexico	2003	2009	Extant (3 colonies with several hundred individuals)

						documented in 2003)
Sierra la Madera	Protected Natural Resource Area, Protected Forest Zone	Sierra la Madera	Coahuila, Mexico	1977	unable to access in 2009	unknown
Sierra El Jardín	CEMEX- APFF Maderas del Carmen	Sierra El Jardín	Coahuila, Mexico	1973	1973	unknown
Fraile	Ejido	24 kilometers (km) (15 miles (mi)) northwest of Fraile	Coahuila, Mexico	1941	1941	unknown

Figure 1. Current and historic locations of Guadalupe fescue.



Unit Descriptions

We have identified a single unit of proposed critical habitat consisting of 5 subunits totaling 3,163 hectares (ha) (7,815 acres (ac)). All subunits are considered occupied and are within the Chisos Mountains of Big Bend National Park (see maps in Figures 2 and 3 below). See Tables 2 and 3 for summaries of land ownership and areas. No units or portions of units are being considered for exclusion or exemption. The physical and biological feature essential to the conservation of the species is conifer-oak woodlands above 1,800 m (5,905 ft) elevation.

Occupied habitat for Guadalupe fescue is defined as areas with positive survey records from 2009 to the present and the areas surrounding survey records that contain conifer-oak woodlands and are not separated by gaps of lower-elevation (<1,000 m) terrain greater than 5 km wide. Habitat areas do not need to be contiguous to be considered occupied, provided that they are not separated by low-elevation (<1,000 m elevation) gaps. This rationale is based on expected long-distance dispersal of viable seeds of Guadalupe fescue by large mammals (Janzen 1984), such as elk, Carmen whitetail deer, or pronghorn antelope. Viable seeds would be deposited within the animal's home range; in the case of deer in the arid southwestern U.S., this range could be up to 3 to 5 km (Innes 2013).

Table 2: Size and ownership of proposed Guadalupe fescue critical habitat units.

Sub-Unit	Occupancy/Presence	Ownership	Size (ha)	Size (ac)	Co-occurring Listed Species
1	Yes	National Park Service	2,648	6,542	Mexican long-nosed bat
2	Yes	National Park Service	391	966	Mexican long-nosed bat
3	Yes	National Park Service	100	248	Mexican long-nosed bat
4	Yes	National Park Service	13	32	Mexican long-nosed bat
5	Yes	National Park Service	10	25	Mexican long-nosed bat
TOTAL:			3,163	7,815	

Table 3: Guadalupe fescue unit and co-occurring listed species or existing critical habitat.

Unit	Co-occurring Listed Species or Existing Critical Habitat for Listed Species?	Area	Incremental Conservation Efforts Recommended after Critical Habitat Designated?	Major Changes? [refers to conservation recommendations post-CH designation]
Chisos Mountains	Mexican long-nosed bat (<i>Leptonycteris nivalis</i>).	Chisos Mountains	No	No

Unit 1: Chisos Mountains Unit Description

This unit consists of 3,163 hectares (ha) (7,815 acres (ac)) within the Chisos Mountains of Big Bend National Park (see maps in Figures 2 and 3). This unit is considered occupied by the species. This unit provides the essential physical and biological components needed for the species, which includes conifer-oak woodlands above 1,800 m (5,905 ft) elevation. The physical or biological features in this unit may require special management consideration.

Figure 2. Guadalupe Fescue Proposed Critical Habitat at Big Bend National Park, Brewster County, Texas.

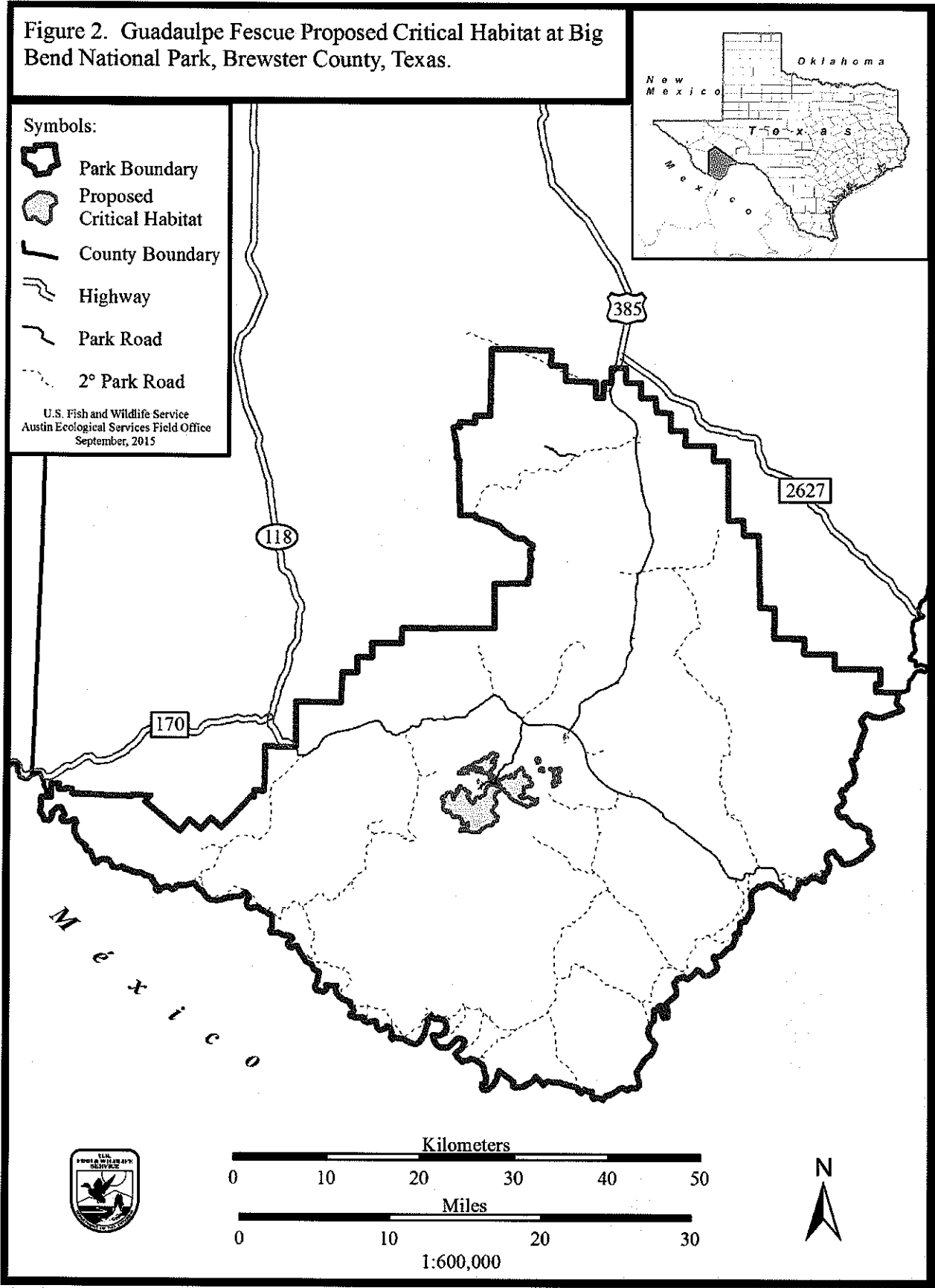






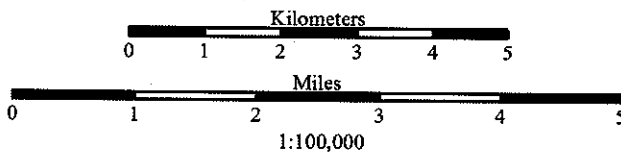
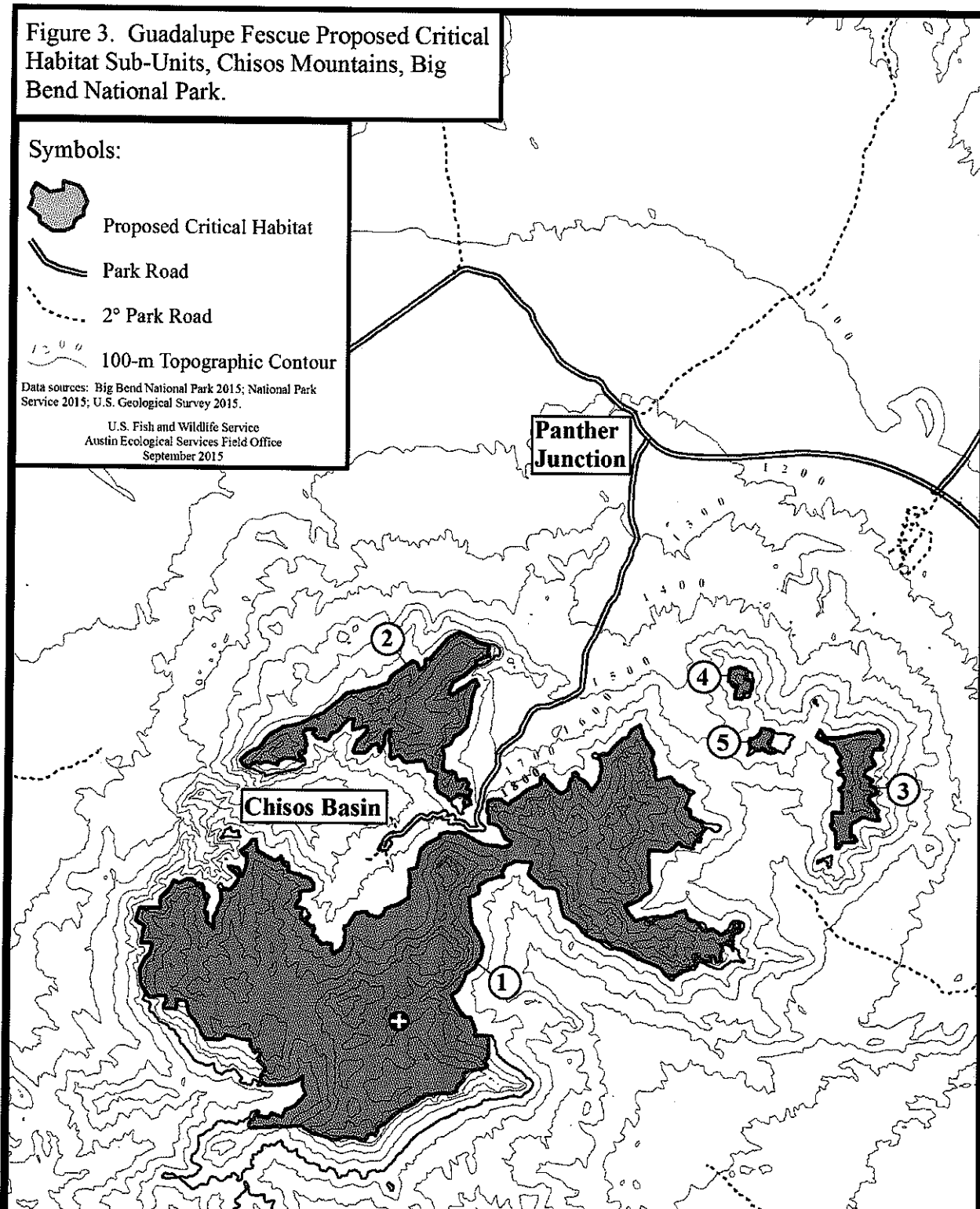
Figure 3. Guadalupe Fescue Proposed Critical Habitat Sub-Units, Chisos Mountains, Big Bend National Park.

Symbols:

-  Proposed Critical Habitat
-  Park Road
-  2° Park Road
-  100-m Topographic Contour

Data sources: Big Bend National Park 2015; National Park Service 2015; U.S. Geological Survey 2015.

U.S. Fish and Wildlife Service
Austin Ecological Services Field Office
September 2015



Sub-Unit	Area Ha	Area Ac
1	2647.6	6542.4
2	391.1	966.4
3	100.4	248.2
4	13.1	32.4
5	10.3	25.4
Total:	3162.5	7814.8

II. BASELINE ANALYSIS

A. Identify conservation plans and regulatory mechanisms that provide protection to the species and its habitat absent the critical habitat designation.

1. Conservation Plans/Efforts

The following are ongoing conservation efforts that provide some benefits to the Guadalupe fescue and are considered part of the baseline because these activities will occur with or without critical habitat designation.

Candidate Conservation Agreement - *Festuca ligulata* (Guadalupe fescue), July 2008 (Big Bend National Park and the Service 2008) – Candidate Conservation Agreements are formal, voluntary agreements between the Service and one or more parties to address the conservation needs of one or more candidate species or species likely to become candidates in the near future. Participants voluntarily commit to implement specific actions designed to remove or reduce threats to the covered species, so that listing may not be necessary. Under a CCA, no Enhancement of Survival Permit is issued. This means there is no permit that authorizes incidental take of the covered species in the event listing occurs, and no assurances are provided by the Service. This CCA expires in July 2018; if the species is listed, the CCA will no longer be in effect. However, we are confident that the NPS will continue implementing the conservation actions of the CCA. This CCA includes the following actions that benefit Guadalupe fescue:

- Seek support for small-scale experiments to test the effects of surface fires on Guadalupe fescue seedling recruitment and survival, conduct micro-burns in occupied habitat, and monitor recruitment and survival. If fire is determined to benefit Guadalupe fescue, expand fire treatments on up to 10 percent of occupied habitat.
- Examine the potential use of leaf litter removal, soil tillage, or other actions (in addition to prescribed fire) to prevent loss of habitat or damage to populations. Examine the potential for reintroduction of Guadalupe fescue within its historic range.
- Pursue cooperative efforts with Mexican government agencies, universities, and non-profit non-governmental organizations (NGOs) to increase protection, identify threats and actions necessary to minimize threats, and manage populations of Guadalupe fescue in Mexico. In cooperation with Mexican partners, inventory and monitor Guadalupe fescue populations at least biannually, and collect seeds for seed banking, at the Maderas del Carmen and Sierra la Madera populations in northern Coahuila.
- Search for extant populations of Guadalupe fescue in McKittrick Canyon and elsewhere at Guadalupe Mountains National Park.
- Seek support for research on seed mortality and soil seed bank dynamics, genetic variation, outbreeding and inbreeding depression, and population viability. Investigate the potential use of live (non-seed) germ plasm banking of the U.S. and Mexican populations of Guadalupe fescue.
- Complete updated status report for Guadalupe fescue.
- Develop measurable biological objectives for the conservation of Guadalupe fescue.

2. Federal Regulations/Acts

The following Federal laws and regulations provide some benefits to the Guadalupe fescue and are considered part of the baseline because these benefits will continue with or without critical habitat designation.

Endangered Species Act. Guadalupe fescue has been a candidate for listing since December 15, 1980 (45 FR 82480). Candidate species are plants and animals for which the Service has sufficient information on their biological status and threats to propose them as endangered or threatened under the Act, but for which development of a proposed listing regulation is precluded by other higher priority listing activities. Candidate species receive no statutory protection under the Act. The Service encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the Act.

The Mexican long-nosed bat, listed as endangered under the Act, also occurs within the same area in the Chisos Mountains. As a result, the Guadalupe receives some collateral benefits in areas of habitat overlap. For example, restricting hikers to established trails protects both bats and Guadalupe fescue.

NPS Organic Act (16 USC 1—4). The NPS will survey for, protect, and strive to recover all species native to national park system units that are listed under the Act. The NPS will fully meet its obligations under the Act to both proactively conserve listed species and prevent detrimental effects to these species. To meet these obligations, the NPS will:

- Cooperate with the Service to ensure that NPS actions comply with both the written requirements and the spirit of the Act. This cooperation should include the full range of activities associated with the Act, including consultation, conferencing, informal discussions, and securing all necessary scientific and/or recovery permits;
- Undertake active management programs to inventory, monitor, restore, and maintain listed species' habitats; control detrimental nonnative species; manage detrimental visitor access; and reestablish extirpated populations as necessary to maintain the species and the habitats upon which they depend;
- Manage designated critical habitat, essential habitat, and recovery areas to maintain and enhance their value for the recovery of threatened and endangered species;
- Cooperate with other agencies to ensure that the delineation of critical habitat, essential habitat, and/or recovery areas on NPS-managed lands provides needed conservation benefits to the total recovery efforts being conducted by all the participating agencies;
- Participate in the recovery planning process, including the provision of members on recovery teams and recovery implementation teams where appropriate;
- Cooperate with other agencies, states, and private entities to promote candidate conservation agreements aimed at precluding the need to list species; and
- Conduct actions and allocate funding to address endangered, threatened, proposed, and candidate species.

The NPS will also inventory, monitor, and manage state and locally listed species in a manner similar to its treatment of federally listed species to the greatest extent possible. In addition, the NPS will inventory other native species that are of special management concern to the NPS (such

as rare, declining, sensitive, or unique species and their habitats) and will manage them to maintain their natural distribution and abundance.

National Environmental Policy Act (NEPA) (Public Law 91–190). Requires Federal agencies to systematically assess the environmental impacts of their proposed actions and consider alternative ways of accomplishing their missions, which are less damaging to and protective of the environment.

3. Federal Land Management.

The following Federal agencies own and manage lands within the some of the areas proposed as critical habitat. Their ongoing land management activities are considered part of the baseline because they will provide some benefits to the Guadalupe fescue with or without critical habitat designation. For those future proposed activities that may affect the Guadalupe fescue or its critical habitat, section 7 consultation has or will occur and may be considered as part of the incremental effects of critical habitat designation (see further discussions that follow).

National Park Service (NPS). The NPS owns and manages Big Bend National Park, where all of the proposed critical habitat of the Chisos Mountains Unit is located. See NPS Organic Act (16 USC 1—4) described above. In addition, Big Bend National Park implements the following to benefit the Guadalupe fescue:

- Big Bend National Park Fire Management Plan (NPS 2005) calls for suppression of human-ignited fires, but allows low-intensity natural fires to burn within small portions

of Guadalupe fescue habitat. The Plan also prescribes avoidance and quick control of inadvertent damage caused by wildfire management activities. The plan has been reviewed under NEPA and by the Service. Low-intensity fires, which historically occurred in Guadalupe fescue habitat areas, may be beneficial to long-term conservation of Guadalupe fescue. Conversely, the long absence of fire may be detrimental to Guadalupe fescue because the increasing amount of tree canopy limits the amount of light available to Guadalupe fescue plants, increasing shrub density creates more competition for resources, and accumulation of deep layers of leaf litter makes it difficult for new Guadalupe fescue plants to establish from seed.

- NPS policy prohibits commercial livestock at Big Bend National Park, and invasive plant and animal species are actively prevented and controlled. In 2014, Big Bend National Park prepared a draft Big Bend National Park Exotic Species Management Plan, and on September 19, 2014, initiated formal section 7 consultation with the Service (02ETAU00-2013-I-0170).
- Big Bend National Park visitors are educated about conservation, fire prevention, erosion control, exotic species, and protection of native vegetation. Camping is allowed only in designated places, and hiking is allowed only on established trails.
- Scientific research and collection permits are reviewed to prevent impacts to Guadalupe fescue.
- The Big Bend National Park botanist and other natural resources staff monitor the Guadalupe fescue population annually.

4. Tribal Regulations

Guadalupe fescue does not occur on any tribal lands and critical habitat has not been proposed on any tribal lands.

5. State Wildlife Laws

The following wildlife laws by the states where the Guadalupe fescue occurs provide some benefits to the Guadalupe fescue and are considered part of the baseline because these benefits will continue with or without critical habitat designation.

Texas Parks And Wildlife Code Chapter 88 - Lists plant species as State-threatened or endangered once they are federally-listed with these statuses. Therefore, if we list the species as threatened or endangered then we expect that Guadalupe fescue will be listed as threatened or endangered by the State of Texas. The State prohibits taking and/or possession for commercial sale of all or any part of an endangered, threatened, or protected plant from public land (including National Parks). Texas Parks and Wildlife Department requires commercial permits for the commercial use of listed plants collected from private land. Scientific permits are required for collection of endangered plants or plant parts from public lands for scientific or education purposes. These protections are considered part of the baseline because these benefits will continue with or without critical habitat designation.

B. Federal agencies and other project proponents that are likely to consult with the Service under section 7 absent the critical habitat designation.

In the baseline scenario, section 7 of the Act requires Federal agencies to consult with the Service to ensure that any action authorized, funded, or carried out will not likely jeopardize the continued existence of Guadalupe fescue. The Federal agency and projects that would likely go through the section 7 consultation process, whether or not critical habitat is designated, are described below.

National Park Service. The NPS has already initiated section 7 consultation with the Service regarding its Big Bend National Park Exotic Species Management Plan. Consultation may also be required in the future regarding actions at Big Bend National Park, including fire management, trails construction and maintenance, visitors and public use, and infrastructure and road construction.

Table 4: Conservation Plans or other Protections Afforded to Guadalupe fescue.

Unit	Conservation Plan/Protection Measure	Area Covered by Plan/Measure	All or Some Activities Covered?	Recommend Changes after Critical Habitat Designated?	Major Changes?
Chisos Mts.	NPS land management policies and procedures	Big Bend National Park	All	None.	None.
Chisos Mts.	Candidate Conservation Agreement	Big Bend National Park	All	None.	None.

C. Once Critical Habitat Is Designated, Will The Outcome Of Section 7 Consultations In Occupied Habitat Be Different?

We do not anticipate changes in section 7 consultation.

Big Bend National Park has already adopted the project modifications that we currently recommend, or are likely to recommend in the future, to avoid jeopardy to Guadalupe fescue.

These modifications are:

- Big Bend National Park staff review all construction, maintenance, and fire management plans to avoid potential impacts to Guadalupe fescue and its habitat. Trail crews,

maintenance crews, stock handlers, and Fire Management staff are briefed by the Big Bend National Park botanist and other natural resources staff on the location, identification, and avoidance of Guadalupe fescue when working in its known or potential habitat.

- Big Bend National Park visitors are educated about conservation, fire prevention, erosion control, exotic species, and protection of native vegetation. Camping is allowed only in designated areas and is prohibited within the Guadalupe fescue population site. Hikers are restricted to established trails.
- Invasive plant infestations are avoided by minimizing ground disturbance and damage to existing native vegetation. Existing infestations are controlled in and near Guadalupe fescue habitat. Exotic animals are monitored, and if found, trapped and removed from the Boot Canyon site. Commercial livestock are not allowed anywhere in Big Bend National Park. In 2015, Big Bend National Park formalized its invasive species management through the Big Bend National Park Exotic Species Management Plan (a compendium of 3 plans dealing with exotic plants, exotic animals, and livestock); this plan is currently being reviewed through section 7 consultation with the Service.
- Trail drainage structures in Guadalupe fescue habitats are examined to evaluate potential impacts of debris flow, altered soil moisture, and disturbance. If problems are found, they are corrected.
- All scientific research and collection permits issued by Big Bend National Park are reviewed to prevent negative effects to Guadalupe fescue.

III. INCREMENTAL IMPACTS ANALYSIS

A. ADVERSE MODIFICATION ANALYSIS

Explain Additional Recommendations The Service Will Make When Considering Both Jeopardy And Adverse Modification.

1. What Federal Agencies Or Project Proponents Are Likely To Consult With The Service Under Section 7 With Designation Of Critical Habitat? What Kinds Of Additional Activities Are Likely To Undergo Consultation With Critical Habitat?

National Park Service, Big Bend National Park. No additional activities.

2. Provide Examples Representing Typical Recommendations to Avoid Adverse Modification of Critical Habitat Applicable Across A Broad Suite Of Projects. Where Significant Uncertainty Exists, Provide Ranges Of Potential Outcomes.

The recommendations to avoid jeopardy, listed under section II, above, represent typical recommendations that would also avoid adverse modification of critical habitat for Guadalupe fescue. Additionally, we will recommend conducting surveys for Guadalupe fescue for new projects that will take place within areas of occupied critical habitat that are outside known population locations.

3. What Types Of Project Modifications Might The Service Make During A Section 7 Consultation To Avoid Destruction Or Adverse Modification Of Critical Habitat That Are Different Than Those For Avoiding Jeopardy?

To avoid adverse modification of critical habitat, we will likely only request the project modifications already listed under section II, above, for avoiding jeopardy. Hence, there will likely be no difference in project modifications between avoiding jeopardy and avoiding adverse modification.

4. If The Species is Only Seasonally Or Sporadically Present Would The Outcome Of The Consultation Be The Same If Present at Time of Section 7 Consultation?

Guadalupe fescue is a perennial plant. Although individual terrestrial plants, including Guadalupe fescue, do not change location, plant populations do move and expand over time.

5. What Project Proponents Are Likely To Pursue HCPs Under Section 10 After The Designation Of Critical Habitat?

None. The designated critical habitat is entirely within a federally-owned National Park.

B. UNOCCUPIED AREAS OR AREAS WHERE THE SPECIES IS NOT PRESENT

Does the designation include unoccupied habitat that was not previously subject to the requirements of section 7?

No

1. Identify Unoccupied Units Or Subunits.

Not applicable.

2. Provide Information About The Likelihood That Project Proponents Would Have Known About The Potential Presence Of The Species Absent Critical Habitat

Not applicable.

3. Describe Typical Project Modifications the Service Will Recommend When Considering Adverse Modification

Not applicable.

4. Provide Examples Representing Typical Recommendations Applicable Across A Broad Suite Of Projects. Where Significant Uncertainty Exists, Provide Ranges Of Potential

Outcomes.

Not applicable.

C. BEHAVIOR CHANGES

Will the designation provide new information to stakeholders resulting in different behavior?

1. Describe Actions Taken By Stakeholders As A Result Of Critical Habitat.

We expect this critical habitat designation to have a minimal change in stakeholder behavior at Big Bend National Park, because there is a CCA in place and NPS regulations and policies protect and strive to recover all species native to NPS units that are listed under the Act. The only behavior change we foresee is due to our definition of occupied proposed critical habitat including areas that we did not consider in the Candidate Conservation Agreement with the NPS. We will recommend conducting surveys for Guadalupe fescue for new projects that will take place within areas of occupied critical habitat that are outside known population locations. This will be a new recommendation for the NPS.

2. Describe How Local Agencies Might Change Project Requirements.

We anticipate no change in project requirements as a result of the critical habitat designation, above and beyond the requirements listed under the Candidate Conservation Agreement.

3. How Many New Consultations May Result From The Critical Habitat Alone?

Based on prior consultation history with Big Bend National Park, we anticipate that the critical habitat designation would result in a range of 0 to 2 new consultations per decade.

4. How Many New HCPs May Be Undertaken Or Reinitiated As A Result Of The Critical Habitat Designation Alone?

None. The critical habitat is entirely within an existing National Park.

5. Will There Be Changes In Permitting Processes By Other State Or Local Agencies Or Other Land Managers? Chapter 88 of the Texas Parks and Wildlife Code lists plant species as state-threatened or endangered once they are federally-listed with these statuses. The State prohibits taking and/or possession for commercial sale of all or any part of a state-listed endangered, threatened, or protected plant from public land. TPWD requires permits for the commercial use of listed plants collected from private land (including federal lands such as Big Bend National Park). Scientific permits are required for collection of endangered plants or plant parts from public lands for scientific or educational purposes. Nevertheless, no additional state or local permitting requirements

will result from the designation of critical habitat.

D. ADMINISTRATIVE EFFORTS

How Much Additional Administrative Effort Will Be Spent To Address Adverse Modification In Section 7 Consultations With Critical Habitat? Estimate The Difference Compared To Baseline.

A federally-listed terrestrial plant with designated critical habitat in Texas is Zapata bladderpod (*Physaria thamnophila*). Zapata bladderpod is a narrow endemic species, known from only two counties, and nearly all its designated critical habitat is on a federally-owned National Wildlife Refuge; hence, the administrative effort required to address adverse modification of critical habitat for Guadalupe fescue should be closely comparable to that of Zapata bladderpod. In the 15 years since critical habitat was designated for Zapata bladderpod, only one formal section 7 consultation has been concluded and a second one is currently underway. Neither of these consultations involved adverse modification of critical habitat, and the amount of additional administrative time to reach that conclusion was less than 1 hour. Therefore, we conclude that the critical habitat designation for Guadalupe fescue will require less than one hour of additional administrative effort to address adverse modification of critical habitat.

E. PROBABLE PROJECTS

Known probable projects that may affect the critical habitat designation or require consultation under section 7 of the Act.

The only known probable or proposed projects that overlap with the Guadalupe fescue critical habitat designation are the proposed Boot Cabin replacement and the Big Bend National Park Exotic Species Management Plan. The NPS has initiated section 7 consultation regarding the Boot Cabin replacement (21450-2011-TA-0128) but this consultation has not been completed. This project is of limited scope and we do not anticipate that it would affect the critical habitat designation. The Exotic Species Management Plan is currently under formal section 7 consultation with the Service (02ETAU00-2015-F-0333). The Biological Assessment, dated May 8, 2015, does not address critical habitat, as none was designated at that time (NPS 2015). The activities of the Exotic Species Management Plan may affect critical habitat for Guadalupe fescues; nevertheless, we do not anticipate that we will make any recommendations in addition to those that address avoidance of jeopardy.

1. Land Use Sectors Within The Critical Habitat Designation Area

- *What economic activities may be affected by the designation of critical habitat?* The Chisos Mountains Unit is the only designated critical habitat for Guadalupe fescue. Recreational activities allowed by Big Bend National Park, such as hiking, camping, and bird watching, may take place within this unit, and privately owned concessions, such as

the Chisos Mountains Lodge, restaurant, and store, serve the needs of visitors.

Nevertheless, critical habitat is not likely to affect these activities.

- *Is there a Federal nexus for each of these economic activities?* Yes, the entire unit is within the federally-owned Big Bend National Park.
- *Are there energy supply, distribution, or use sectors that are reasonable likely to be affected by this critical habitat designation?* No.
 - *If YES, in what units and what specific sectors (e.g., water for hydropower, oil/gas leases, power lines, pipelines).* Not applicable.

2. Consultation History Within The Critical Habitat Designation Area

Since 1992, the NPS has consulted with the Service 25 times regarding proposed projects at Big Bend National Park: 19 informal consultations, 5 technical assistance consultations, and one ongoing formal consultation. Five of these projects would have overlapped in some way with the proposed critical habitat for Guadalupe fescue. These five consultations are summarized in Table 4 below.

Table 5. Section 7 consultations with the NPS on projects overlapping proposed critical habitat for Guadalupe fescue.

Consultation No.	Type of Consultation	Title	Description	Status
21450-1992-I-0196	Informal	Relocation of Laguna Meadows Trail	Trail relocation.	Completed
21450-2000-I-0572	Informal	Big Bend Prescribed Fire	An extension of 1994 Fire Management Plan.	Completed
21450-2006-TA-0226	Technical Assistance	Emory Peak Trail Realignment	Trail alignment.	Completed
21450-2011-TA-0128	Technical Assistance	U.S. Department of Interior/NPS	Possible replacement of Boot cabin along Boot Canyon trail.	Ongoing
02ETAU00-2015-F-0333	Formal	Big Bend National Park Exotic Species Management Plan	Includes management plans for exotic animals, exotic plants, and livestock.	Ongoing

The two trail projects and the Boot Cabin replacement are of very limited scope and will not result in any additional recommendations or project modifications other than those to avoid jeopardy. The prescribed fire and exotic species management projects could potentially affect critical habitat, but will not result in any additional recommendations or project modifications other than those to avoid jeopardy. In 2014, the park prepared a draft Big Bend National Park Exotic Species Management Plan, and on September 19, 2014, initiated formal section 7 consultation with the Service (02ETAU00-2013-I-0170). The Biological Assessment, dated May 8, 2015, concluded that the proposed plan may affect, and is likely to adversely affect, but is not likely to jeopardize the continued existence of Guadalupe fescue. Further, the long-term effects would likely benefit the species by reducing competition from exotic plants and damage from exotic animals and trespass livestock (NPS 2015). This consultation has not been concluded. However, it is relevant that the provisions of the prescribed burning and Exotic Species Management Plan are listed as actions in the Candidate Conservation Agreement. Therefore, we anticipate that these projects will not result in any additional recommendations or project modifications other than those to avoid jeopardy.

V. CONCLUSION

We have proposed designating a single unit of occupied critical habitat for Guadalupe fescue. This Chisos Mountains unit totals 3,163 ha (7,815 ac), and is entirely contained within federally-owned land at Big Bend National Park. We have not identified any ongoing or future actions that would warrant additional recommendations or project modifications to avoid adversely modifying critical habitat above those we would recommend for avoiding jeopardy.

Regarding projects that would occur in occupied habitat outside known population locations, we will recommend that Big Bend National Park first conduct surveys for Guadalupe fescue within the project impact area. If the species is found, we will recommend the same modifications previously described for avoiding jeopardy to the species. If the species is not found, we will recommend only that Big Bend National Park follow its established land management procedures.

Ongoing or proposed economic activities that occur within the proposed critical habitat unit would not be affected due to the proposed critical habitat.

We anticipate minimal change in behavior at Big Bend National Park due to the designation of critical habitat for Guadalupe fescue. The only change we foresee is conducting surveys in areas of critical habitat based on our recommendation for surveys. Based on Big Bend National Park's history of consultation under section 7 of the Act and on the consultation history of the most comparable species, Zapata bladderpod, we anticipate that this critical habitat designation may result in from 0 to 2 additional consultations per decade.

We appreciate the opportunity to provide this information to you. If you have any questions or request clarification of any of the items described here, please do not hesitate to call Chris Best at 512-490-0057 x 225.

Sincerely,

A handwritten signature in black ink, consisting of a large, loopy initial 'A' followed by a long, horizontal stroke that ends in a small flourish.

Adam Zerrenner

Field Office Supervisor

Austin Ecological Services Field Office

VI. LITERATURE CITED.

Big Bend National Park and the U.S. Fish and Wildlife Service 2008. Candidate Conservation Agreement for *Festuca ligulata* (Guadalupe Fescue). 18 pp. + 5 pp. appendices. U.S. Fish and Wildlife Service, Austin Ecological Services Field Office.

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